DNV·GL

Certificate No:
TAE00002Z5

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Circuit Breaker

with type designation(s)
Susol VCB

Issued to
LSIS Co., Ltd. Cheong Ju Plant
Cheongju-si, Chungcheongbuk-do, Republic of Korea

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Medium Voltage Vacuum Circuit Breaker for installation inside switchboards / enclosures onboard ships and mobile offshore units.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.
Rated voltage (V) 7.2 - 12 - 17.5 kV
Rated current (A) 630 - 2000

Issued at **Busan** on **2018-12-20**
This Certificate is valid until **2022-12-31**.
DNV GL local station: **Seoul**

Approval Engineer: **Dong Ho Park**

for **DNV GL**

Andreas Kristoffersen
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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Product description

Medium voltage Vacuum Circuit Breakers of type Susol VL.

Types:	VL-06□20□06	VL-06□20□13	VL-06□20□20	VL-06□25□06	VL-06□25□13	VL-06□25□20
Rated voltage Ur (kV):	7.2	7.2	7.2	7.2	7.2	7.2
Power frequency withstand voltage Ud (kV):	20	20	20	20	20	20
Impulse withstand voltage Up (kV):	60	60	60	60	60	60
Rated normal current Ir (A):	630	1250	2000	630	1250	2000
Rated frequency (Hz):	50/60	50/60	50/60	50/60	50/60	50/60
Rated short circuit breaking current Isc (kA):	20	20	20	25	25	25
Rated short time withstand current (3 s) Ik (kA):	20	20	20	25	25	25
Rated short circuit making current Ip (kA) (50/60Hz):	50/52	50/52	50/52	62.5/65	62.5/65	62.5/65

Types:	VL-12□20□06	VL-12□20□13	VL-12□20□20	VL-12□25□06	VL-12□25□13	VL-12□25□20
Rated voltage Ur (kV):	12	12	12	12	12	12
Power frequency withstand voltage Ud (kV):	28	28	28	28	28	28
Impulse withstand voltage Up (kV):	75	75	75	75	75	75
Rated normal current Ir (A):	630	1250	2000	630	1250	2000
Rated frequency (Hz):	50/60	50/60	50/60	50/60	50/60	50/60
Rated short circuit breaking current Isc (kA):	20	20	20	25	25	25
Rated short time withstand current (3 s) Ik (kA):	20	20	20	25	25	25
Rated short circuit making current Ip (kA) (50/60Hz):	50/52	50/52	50/52	62.5/65	62.5/65	62.5/65

Types:	VL-17□20□06	VL-17□20□13	VL-17□20□20	VL-17□25□06	VL-17□25□13	VL-17□25□20
Rated voltage Ur (kV):	17.5	17.5	17.5	17.5	17.5	17.5
Power frequency withstand voltage Ud (kV):	38	38	38	38	38	38
Impulse withstand voltage Up (kV):	95	95	95	95	95	95
Rated normal current Ir (A):	630	1250	2000	630	1250	2000
Rated frequency (Hz):	50/60	50/60	50/60	50/60	50/60	50/60
Rated short circuit breaking current Isc (kA):	20	20	20	25	25	25
Rated short time withstand current (3 s) Ik (kA):	20	20	20	25	25	25
Rated short circuit making current Ip (kA) (50/60Hz):	50/52	50/52	50/52	62.5/65	62.5/65	62.5/65

Application/Limitation
Shall be installed DNVGL Rules for Ships/High Speed, Light Craft and Naval Surface Craft.

Location Classes:

Temperature: B, Humidity: B, Vibration: A

Type Approval documentation

Tests carried out
Type tests in accordance with IEC by IEC 62271-100 Ed 2.2(2017), dielectric performances, temperature-rise, operation performances, mechanical endurance, and shorts-circuit making and breaking.

Environmental tests in accordance with class guideline DNVGL-CG-0339, November 2016: power supply variation, insulation resistance, power supply failure, vibration, inclination, damp heat, dry heat, cold temperature and high voltage.

Marking of product
- Manufacturer name
- Model name
- Rating

Certificate retention survey
The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:
- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine tests (RT) and selected type tests (ref. to applicable class programs) checked (if not available these tests shall be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE